THE PRESENT STATUS OF THE TREATMENT OF EXOPTHALMIC GOITER.

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It is a fact that Graves, as early as 1835, and Basedow, a little later, called attention to the disease generally known as exopthalmic goiter, but it is nevertheless true that but little of real value had been evolved until comparatively recent times. A more careful study of the thyroid gland by modern methods of research has brought out many facts which have a direct bearing of the proper treatment of this complex disease.

At present there exists much diversity of opinion as to the etiology and the physiology of this condition, and the only points we seem to have come to at least a partial, if not universal agreement upon, are the symptoms, the pathology, the diagnosis and the treatment; and fortunately these latter are the most important from the standpoint of the patient, the physician and the surgeon.

Exopthalmic goiter is a condition now recognized as a result of hyperthyroidism—increased pathological activity of the gland. Those symptoms which point to the early diagnosis are usually tachycardia, muscular tremors, a gastro-intestinal disturbance and general nervousness. Often excessive perspiration and occasionallya rise of temperature have been noted. The exopthalmos and the enlargement of the thyroid gland are later manifestations of the disease.

Theodore Kocher claims never to have seen a true case of Graves' disease without an enlargement of the thyroid. Beebe, who has been working upon a serum for the treatment of exopthalmic goiter, says that there are two possibilities which explain the origin of the hyperactivity of the gland; the first as a result of nervous shock; and the second as a compensatory hypertrophy during a toxemia.

We all know from recent investigations that there is certainly a remarkable control exercised by the nervous system on glandular activity.

Beebe has further observed: "As to the second hypothesis, there are some histologic studies which indicate that during the infections and also during chronic toxemias the thyroid undergoes cellular hypertrophy, i. e., the additional demand for the detoxicating action of the gland results in its growth."

MacCallam, of Johns Hopkins, who has done much excellent work upon the pathology of exophthalmic goiter, says that: "Even yet there is not a perfect unanimity of opinion as to the anatomic changes which underlie these symptoms. Nearly all writers, except certain clinicians, who have not made anatomic investigations, agree that there are always changes in the thyroid, although there has been much debate as to whether these changes are constant in character or not." He further has said:

"At operation, the superficial veins are found to be very large and easily torn, and are distended with blood, so that the gland has a very congested appearance. This is not striking in the excised portion, since the vessels collapse, and on section the interior of the gland tissue is rather pale. Usually the tissue is hard, and rather rigid than elastic. Its normal amber red translucence gives way to a grayish opacity, and the fresh-cut surface instead of being glairy or gelatinous in appearance, tends to be rather dry and granular."

The histological study of this gland when Graves' disease is present, has been most carefully made by Albert Kocher after an experience of over 300 cases, the largest number reported by any surgeon. He says:

"These changes are: Irregularity in the arrangement of the aveoli (acini): localized changes in the epithelium; the formation of papillæ; increase in size, particularly in the height of the epithelial cells, which are paler in the central portion and darker in the peripheral part, where the large vascular nucleus is situated. The colloid material in the areas, when the epithelial cells are high, is retracted and granular; where there is circular hypertrophy of the cells, the colloid material is flaky and is often found only at the center. In the smaller aveoli the cells are also high and do not contain viscid, tangible colloid material. Interstitial and intra-aveolar lymphocyte infiltration, with desquamation resembling germ centers are quite extensive, or only sparingly present."

Concerning the examination of the blood in exophthalmic cases, the Kochers have observed that there has been a marked increase of lymphocytes and a diminution of polymorpho-nuclears. The leucocyte count itself was normal, the increase of lymphocytes being in proportion to the degree of the disease. Nothing was as yet known as the cause of the lymphocytosis. It was different from that which accompanied pus formation. It explained the danger of the very slightest infection in these cases.

Based upon our modern conception of the physiology and pathology of this disease, what then should be our treatment?

While in the treatment of exopthalmic goiter, the general, medicinal, dietetic, serum therapy and radiotherapy measures have yielded in some few selected cases brilliant, but usually temporary results, on the whole they have been very disappointing, and the real and permanent cures have only resulted from surgical methods. Of course, this does not apply to those physiological types of thyroid enlargement so often found in young women around puberty, but to the real new growths like tumors, which show upon microscopic section a very different histo-pathology from the normal gland slightly hypertrophied. These types usually yield to iodine and electricity, or even disappear spontaneously without any treatment after a reasonable time.

Even those cases of true Graves' disease where the exophthalmos is little and the pulse under 100, operation should not be recommended, but a careful diet and hygiene, with the hopes of seeing an improvement. There are no drugs which have any direct effect upon the gland in Graves' disease, but the symptoms can be treated with some benefit.

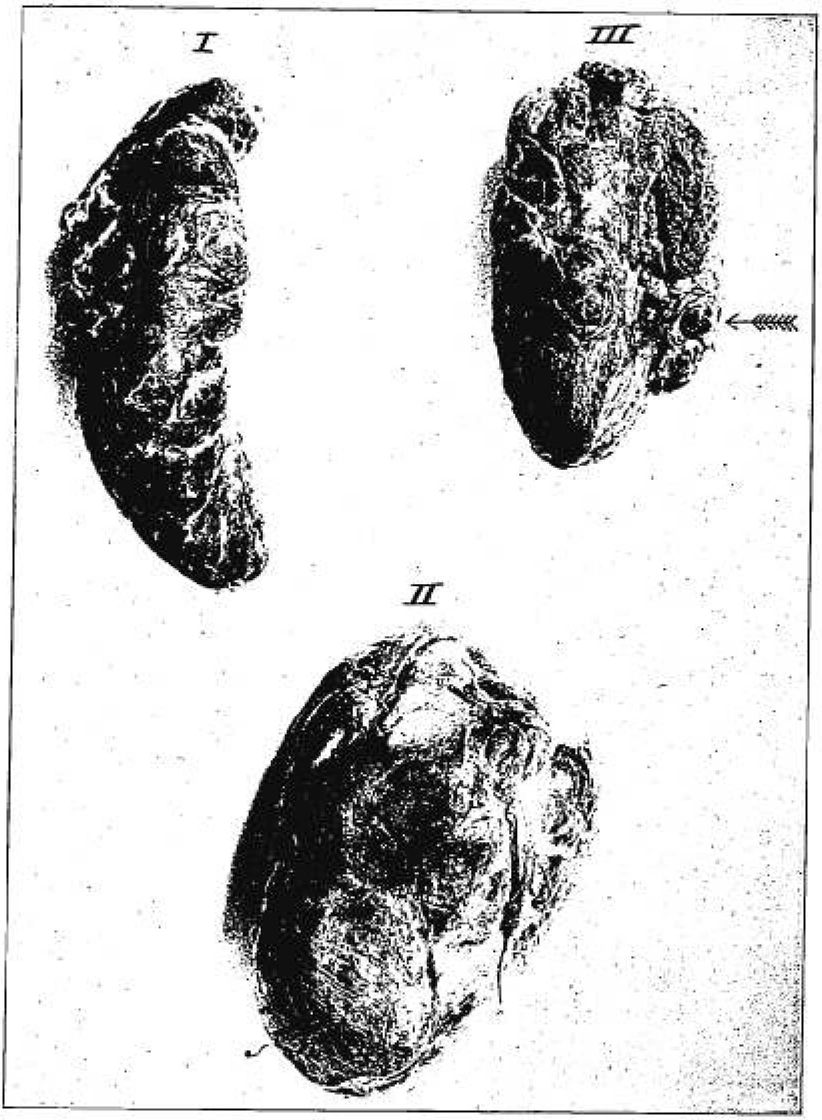
It is to be hoped that Beebe's serum will some day be perfected and produce more positive results, but at present it is difficult to prepare, and by no means uniform.

Halstead has well said that we may hope for future serum therapy, but until it is firmly established, we are compelled to use the only sure means of cure by surgery.

Albert Kocher has written: "To say that surgical treatment is still the best, is not enough; it has proved itself superior to any other form of treatment. It attacks the organ which is instrumental in producing the toxicosis, namely, the thyroid gland."

The Kochers have operated over 300 times for exophthalmia, with a total mortality of 3.5 per cent., and in the last 91 operations they had not a single death. The Mayos have reported 110 operations for Graves' disease with 9 deaths, and in the last 64 of this number, only 2 deaths. Halstead, Crile and others have had equally good results.

With a perfected technique, due largely to the improvements in surgical progress and a more careful study of this gland, we should



EXOPHTHALMIC GOITERS. (Actual Size.)

Specimen I.—Weight 1¾ oz., removed from boy, age 14. Right Lobe. Specimen II.—Weight 4½ oz., removed from girl, age 19. Right Lobe. Specimen III.—Weight 2 oz., removed from girl, age 18. Right Lobe.

(In Specimen III arrow points to a parathyroid gland embedded in the substance of the thyroid.)

now be able to operate with this greatly reduced mortality.

It is not the purpose of this paper to describe in detail the operation employed in removal of goiters, but only to call attention to some points in the modern technique, which have attracted much attention of late, and lead us to more careful consideration of our methods of attacking the thyroid gland. It is a well-established fact that young adults whose entire thyroid has been removed, retrograde in intelligence, and older individuals may develop a myxedema. It has further been noted that the complete removal, injury or cutting off of the blood supply to the parathyroids, when operating upon a goiter, frequently results in tetany, a condition characterized by painful tonic and symmetric spasm of the muscles of the extremities.

The parathyroids are four small glands resembling the suprarenals, and are situated on either side, posterior and attached to the capsule which covers the goiter.

The two lower glands are in close relation to the inferior thyroid artery, and the upper close to the superior; therefore care should be exercised in ligating these vessels so as not to injure the parathyroids, or to entirely cut off their blood supply. Halstead, Berkley, Pool and others have demonstrated lately from very elaborate dissections that the main blood supply to the parathyroids is from a separate branch or branches from the inferior thyroid artery.

Albert Kocher has said: "The operation of Billroth differed from that of Kocher, in that Billroth removed the capsule with the thyroid, whereas Kocher peeled out the thyroid gland from the capsule and left the capsule. This resulted in a diminution of hemorrhage and in preventing injury to the parathyroid glands.

In Vienna, 16 per cent. of the cases operated upon had tetany, while in Berne, only 4 in 1,000. The exophthalmic type of goiter has a very vascular capsule and great care is needed to completely control the hemorrhage.

Following operations of exophthalmic goiters the drainage should be free as with a septic wound.

In the hands of experienced operators, who have carefully observed the many new facts which have been brought to the notice of the surgical world, the mortality of exophthalmic goiter in properly selected and prepared cases should compare favorably with other operations.

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